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ABSTRACT

The State of Virginia has had a statewide nursing home preadmission screening program since 1977 and has made efforts to ensure appropriate placement of individuals in long term care settings. In a major effort to divert certain individuals from institutionalization, a personal care option has been provided. Using data from the Preadmission Screening Program, a study was conducted to examine cases from intermediate care (N=133), skilled care (N=1,088), and community-based care (N=1,390). The results of tabular and logistic regression analyses were used to discuss explanatory models for recommended care settings in an elderly Medicaid population. Significant explanatory variables for recommendations in an institutional setting were consistent with a need for long term supervision and care. Intermediate care recommendations were more often associated with individuals who were not mentally competent or had no one to provide informal support while skilled care individuals generally had specific nursing needs (dressings, decubitis ulcers, medication administration) and increased mobility restrictions while receiving rehabilitative care and services. (Data tables and references are included.) (Author/NB)

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Recommendations For Long Term Care In An Elderly Medicaid Population[1]

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Running Head: LTC Recommendations

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ABSTRACT

Using data from the Preadmission Screening Program in the Commonwealth of Virginia, results of tabular and logistic regression analyses are used to discuss explanatory models for recommended care settings in an elderly Medicaid population. Significant explanatory variables for recommendations in an institutional setting were consistent with a need for long term supervision and care. Intermediate care recommendations were more often associated with individuals who were not mentally competent or had no one to provide informal support while skilled care individuals generally had specific nursing needs (dressings, decubitis ulcers, medication administration) and increased mobility restrictions while receiving rehabilitative care and services.

Key Words: LTC Recommendations, Medicaid, Discharge Planning, Preadmission Screening.

In past years, a popular statistic regarding the institutionalization of older adults has been that only 5 percent of those over 65 years of age are in long term care (LTC) facilities. This has been disputed in the past decade by evidence indicating that approximately one in four older adults will die in a LTC facility (Kastenbaum & Candy, 1973, Lesnoff-Caravaglia 1978). It is now clear that an elder's life-time risk of institutionalization may be approximately 36 percent (Liang & Tu, 1986).

For the past decade, Virginia has been in the forefront of efforts to ensure appropriate placement of individuals in long term care settings. Virginia has had a state-wide nursing home preadmission screening program since 1977. In May, 1983 the screening requirements were changed to include acute care as well as community applicants to nursing homes. At the same time, the DMAS also changed the assessment process to utilization of the Long-Term Care Information System (LTCIS) developed at Cornell University (Falcone, 1979). In a major effort to divert certain individuals from institutional care, the DMAS also provides a personal care option. This Medicaid waiver from the Health Care Financing Administration provides a community care option to certain members of the long term care population. However, these supportive services are offered only if the applicant meets the admission criteria for care in a nursing home.

Consensus on the factors associated with institutionalization has been lacking. Branch (1984) suggested that this lack of consensus appears to be an effect of

methodological differences and inadequacies rather than contrary findings from comparable methods. The result has been that throughout the literature a large number of variables are associated with risk of or actual institutionalization with few variables consistently found to be significant explanatory variables.

Among the major methodological differences in the literature are geographic differences in the samples, samples with restricted generalizability, and the nature of comparisons used in the studies between community elders and institutional care elders (Branch, 1984). One contribution that the present project sought to make to the literature was to address factors influencing community versus institutional care recommendations at the time of application for LTC rather than examining various populations that are only theoretically at risk of long term care.

METHODOLOGY

The Sample

Using data from the Preadmission Screening Program (PAS) of the Virginia Department of Medical Assistance Services (DMAS), the project used a computer selected random sample of cases drawn from the statewide population of elderly Medicaid eligible applicants for long term care in Virginia between July 1, 1983 and December 21, 1984. Medicaid eligible applicants refers to individuals who are current Medicaid recipients or who would be eligible for Medicaid within 180 days of admission to a nursing home.

We requested cases from each of six authorization categories: intermediate care, skilled care, personal care option, home health, personal care and home health, and "other". When fewer than 1200 cases existed in a category, the total number of cases within the category were requested. The categories of personal care option, home health, personal care and home health, and other were sufficiently small to necessitate combining them into a single category of community based care. The category of "other" represented no formal Medicaid supported care recommendations. However, we defined these individuals as community care recipients by virture of their implicit need for services in undergoing a screening process for long term care.

The sample ensured representation of applicants screened by committees of local health departments (PSLH) and acute care facilities (PSAC) as well as authorization decisions for institutional care and community based care. Our sample also included only those cases which represented first-screening assessments for long term care. In addition, the sampling criteria excluded individuals whose usual living arrangements were in a domiciliary/personal care facility or health care facility. Therefore, the sample represented individuals who were not currently residing in a formal long term care environment prior to screening. After deleting cases that were younger than 59 years of age, the final study sample included 1133 cases recommended for intermediate care, 1088 cases for skilled care, and 1390 cases for community based care.

Demographic Characteristics of the Sample

The demographic characteristics of the sample reflected the unique nature of a long term care elderly population. As expected, a large proportion of the sample were female (68.7%) and most were widowed (59.1%). There was, however, an unexpectedly large percentage (37%) of nonwhite cases in the sample, perhaps because nonwhites in Virginia are more likely to meet financial criteria for Medicaid.

The majority of the cases were age 75 years and over. Fully 40% of the total sample were in the 75 to 84 years of age category, while a striking 28% were age 85 years and over. In addition, nearly 72% of the women were 75 years of age and over while only 59% of the men fell into this age group.

Comparison with Virginia and national population data. Table 1 shows the comparisons of the 1983-84 sample with 1985 population projections for Virginia and 1982 national population projections of noninstitutionalized elders 60 years of age and over. Differences between the sample characteristics and state data could be found in each of the three reported categories.

(Insert Table 1 here)

Elderly Virginians in the sample differed from the elderly population of the state most dramatically in the age distributions. The proportion of sample elders in the oldest age category was almost five times greater than the comparable state statistic. Conversely, the proportion of sample elders in the youngest age category was almost one-fifth of the state proportion of the youngest-old. Comparisons of the sample with the national population indicated there were substantial

differences in all four demographic categories. Clearly, the individuals in the study population who were entering a long term care system were a unique subset of the general older adult population. The sample represented higher percentages of females, nonwhites, and the widowed than the general population. These elders were also considerably older than the national population.

The Study Variables. Drawing from the literature of both institutionalized and institutionally vulnerable elders, three categories of explanatory variables (background, social environmental, and physical impairment) were identified as potentially useful for the analyses of recommended care setting.

Significant background variables associated with institutionalization from a variety of studies have included advanced age (Branch, 1984; Branch and Jette, 1982; Davis & Gibbin, 1971; Kraus, et al., 1975; Liu & Manton, 1983; McCoy & Edwards, 1981; Vincente, Wiley, & Carrington, 1979), marital status (not married) (Butler & Newacheck, 1981; Davis & Gibbin, 1971; Greenberg & Ginn, 1979; Liu & Manton, 1983; Palmore, 1976; Vincente et al., 1979), sex (female) (Davis & Gibbin, 1971; Greenberg & Ginn, 1979; Kraus et al., 1976; Liu & Manton, 1983), and race (white) (Kart & Beckham, 1976; McCoy & Edwards, 1981; Palmore, 1976).

Important social environmental variables associated with institutional placement included none or few living children (Greenberg & Ginn, 1979; Palmore, 1976; Townsend, 1965; Wan & Weissert, 1981), living arrangements (living alone) (Branch, 1984; Branch & Jette, 1982; Brody, 1977; Brody, Poulshock, &

Masciocchi, 1978; Butler & Newacheck, 1981; Kraus et al., 1976; McCoy & Edwards, 1981; Neilsen, Blenkner, Bloom, Downs, & Beggs, 1972; Palmore, 1976; Vincente et al., 1979), and lack of available social support (Brody et al., 1978; Greenberg & Ginn, 1979; McCoy and Edwards, 1981; Townsend, 1965).

The group of variables categorized as physical impairment variables for this study have had selected effects on institutionalization. For example, problems with behavior patterns and orientation have sharply delineated elders requiring institutional care for those who can be maintained in the community (Branch & Jette, 1982; Wan & Weissert, 1981). With regard to personal care needs and assistance in daily living, it appears that families seek institutional care for the older adult when care needs become continuous such as incontinence problems (Dunlop, 1980) and feeding and toileting needs (Nash, 1966).

Since approximately one-third of all nursing home admissions are from hospitals (U.S. Department of Health, Education, and Welfare, 1979), gerontologists recently have become interested in examining the characteristics of institutionally vulnerable hospitalized older adults. Few studies have been reported to date on factors influencing care setting recommendations following hospital discharge. Background variables have, however, emerged as the more consistent predictors of nursing home care after hospitalization than either social environmental or physical impairment variables. This is somewhat surprising in view of the fact that hospitalization implies health related, physical impairment problems that should carry over in needs for long term care.

Background variables influencing recommended long-term care placement following hospital discharge have included advanced age (Kane & Matthias, 1984; Kane, Matthias, & Sampson, 1983; Lamont, Sampson, Mattias, & Kane, 1983; McAuley, Travis, & Taylor, in press), and sex (female) (Kane, et al., 1983). Of the social environmental variables, only available living space (McAuley, et al., in press), hospital admission from a nursing home (Kane, et al., 1983), and family's willingness to provide care in the home (Prohaska & McAuley, 1983) have differentiated institutional versus community based care.

Impairment has, for the most part, been a poor predictor for institutional care. The exception is mental impairment which has been reported as a significant predictor variable in this sparse literature (Davis, Shapiro, & Kane, 1984; Kane, et al., 1983; Lamont, et al., 1983). Recently, sensory impairment was reported by McAuley, Travis and Taylor (in press) in differentiating recommendations for institutional versus community based care.

The operationalization of the rehabilitative trajectory and seriousness of illness variables warrant further description since we created these variables from the data set. Fortunately, we did not have to try to determine rehabilitative potential per se. Rather the discharge planning teams and screening committees composed of physicians, nurses, and social workers had already made assessments about the status of rehabilitative trajectories for the individuals in the Virginia Medical Assistance Program. We used these data recorded on the standardized screening instrument to classify individuals in rehabilitative or non-rehabilitative/maintenance tracks. The procedure used for

establishing whether an individual was on a rehabilitative trajectory is diagrammed in Figure 1. We felt that a rehabilitative trajectory variable might be an important explanatory variable reflecting increasing, static, or decreasing care needs.

(Insert Figure 1 here)

Seriousness of illness measures are usually an attempt to quantify the multiple problems of illness that beset older adults. Most often researchers have used counts of diagnoses to measure health or have included only a few major disease categories in their analyses. Wyler, Masuda, and Holmes (1968, 1970) developed a weighting scheme for 126 common medical diagnoses through ranking procedures. This methodology provided us with a means to represent the cumulative effects of multiple diseases in the same individual.

McAuley et al. (in press) used the Seriousness of Illness Index as a determinant of long term care placement decisions for acute care screenings. Weights for health problems which were not included in the 126 medical diagnoses of the Wyler methodology were estimated by members (both Registered Nurses) of the research team. We used the same method to compute seriousness of illness scores from the medical diagnoses (ICD-9-CM) documented for each individual. Table 2 provides a brief description of the explanatory variables used in the analyses.

(Insert Table 2 here)

The dependent study variable for the analyses was recommended care setting. The objective assessment data from the

LTCIS is translated to a single recommended care setting by the screening committee in the case of a community applicant or by a social worker for acute care applicants. We chose to operationalize recommended care setting two different ways for two separate analyses: 1)community versus institutional care recommendations and, for the subsample of institutional recommendations, 2)skilled versus intermediate care recommendations.

Statistical analyses. Data analysis consisted of extensive tabular analysis and logistic regression to attempt to explain recommended care setting. While the general linear model is useful and popular when used with continuous, dependent variables, use of a dichotomous variable (community versus institutional care and intermediate versus skilled care) violates the assumption that the errors are normally distributed. Maximum likelihood logistic regression was our statistical procedure of choice (Cleary & Angel, 1984).

RESULTS

Approximately 73% of the acute care cases were recommended for institutional care compared to only 35% of the community screenings. However, of those community cases recommended for institutionalization, an impressive 91% were for intermediate care while less than half of the acute care cases were recommended for intermediate care.

The majority of those screened had an available community living space and did not live alone. Well over one-half of the sample had only one living daughter or no living daughters. Almost 50% of the elders had only one available social support or

no available social supports. Approximately 81% of the elders without available living space were recommended for institutional care versus slightly over one-half of those with available living space.

There was an inconsistent trend in the association between number of living daughters and institutional versus community care recommendations. Elders with fewer than three or more than six living daughters were most often recommended for institutional care while elders with five or six living daughters were likely to be recommended for community care.

The sample represented a low to moderately ill group with 59.5% of the elders placed at the two lower categories of seriousness of illness. Over half of the sample had none or only one specific physical impairment. Almost two-thirds of the sample had behavior or orientation problems. Three or more mobility problems were reported in over 50% of the sample. Current service use was low with approximatley one-half of the elders reporting receipt of none or only one service. Receipt of nutritional services was also low with over two-thirds of the elders receiving no services or only one nutritional service. The majority of the cases had no decubitis ulcers (87.9%) or dressings (86.3%). Physical care services were remarkably under-utilized with 85.2% of the elders receiving only one service or no services at all. The majority of the cases (57%) needed assistance with medication administration by a licensed person or a Registered Nurse.

There was a 50-50 chance of institutional care

recommendations for individuals with very low or very high numbers of physical impairments and an increasing likelihood of institutional care for elders with one to five impairments. In the institutional subsample, the likelihood of skilled care recommendations also increased with number of physical impairments.

Individuals with more severe behavior/orientation problems were most often recommended for institutional, intermediate care settings. The exception is the comatose category of elders where 96% of the cases received skilled care recommendations.

High to total levels of dependency in activities of daily living generally received recommendations for institutional care. This was not totally surprising in view of the admission criteria used for institutional care in Virginia which includes functional capacity and nursing care needs in the algorithm for recommended care settings.

Logistic regression models. When the institutional versus community care recommendation variable was regressed on the background, social environmental, and physical impairment variables, eleven variables were significant contributors to the regression model (Table 3). Individuals recommended for institutional care were more likely to be older, white, and located in acute care facilities at the time of preadmission screening. The elders had more ADL dependencies, no available community living space, fewer living daughters, and fewer available informal social supports. The LTC applicants recommended for institutional care were also more likely to have greater degrees of behavior/orientation problems, need more

assistance with medication administration, have less nutritional service needs, and to be in a rehabilitative trajectory at the time of screening. Together the eleven variables explained 22.4% of the variance in institutional versus community care recommendations.

(Insert Table 3 here)

The second regression procedure used the institutional care subsample to regress intermediate versus skilled care recommendations on the same set of explanatory variables (Table 4). Individuals recommended for skilled care were more likely to be younger, nonwhite females. These elders were more likely to be located in acute care facilities time of preadmission screening and to have fewer ADL dependencies while reporting more available informal social supports. These elders were also more likely to have more physical impairments, greater need for assistance with medication administration, more dressings and more decubitis ulcers than elders receiving intermediate care recommendations. They also had more mobility restrictions while being on a rehabilitative trajectory. Together the twelve variables explained 24.3% of the variance in skilled versus intermediate care recommendations.

(Insert Table 4 here)

DISCUSSION

It appears from these analyses that the hospital to nursing home linkage is very strong. The fears of older people that their hospitalization will result in institutionalization appear to be justified. With almost three-fourths of the acute care cases receiving institutional care recommendations, one might

expect the physical impairment variables to be significant. Five of the eleven significant variables were, in fact, physical impairment variables.

We find from the analysis that these elders (generally older, white women) were physically and mentally impaired at the time of hospital discharge and lack family or friends and available living space to remain in the community, even if they were willing and able to do so. With a need for assistance with ADL, medication administration, and rehabilitative care and services as well as supervision of behavior/orientation problems the cost of maintaining these elders in the community would probably be cost prohibitive as well.

There did not appear to be any surprises in the explanatory model for institutional care recommendations. One cannot help but wonder, if the older person improved with nursing home care, where would the person go upon nursing home discharge with such reported low levels or absence of available social support in this group of elders. The incentive for improved level of functioning and nursing home discharge are, perhaps, two of the greatest dilemmas in institutional care.

The eligibility categories for intermediate and skilled care under the Virginia DMAS consider criteria for both the functional capacity of an individual and his/her nursing needs. Skilled care is more narrowly defined and includes the additional need for such specialized care as intravenous therapy, oxygen therapy, and nasogastric tubes.

The logistic regression procedure for skilled versus

intermediate care presents an interesting picture of the elder recommended for skilled care. These individuals appear to be severly impaired at the time of screening in the hospital. However, the fact that these elders are younger females with more informal social supports than the intermediate care recommendations may suggest that this group of elders has the greatest potential for nursing home discharge following post-hospital recuperation in a nursing home. The presence of more dressings and decubitis ulcers also suggests a prolonged, major hospitalization and/or extended immobility prior to application to LTC. Since our sample included only first time applicants to LTC, these elders may reflect home situations in which the elder has been maintained by the family until the medical condition and/or care requirements of the elder exceeded the ability and resources of the caregiver to provide continued care.

CONCLUSIONS

In general, the explanatory variables for recommended care settings for medicaid elders do not differ from the variables suggested by the review of the literature for institutionalized and institutionally vulnerable elders. "Old, alone, and impaired" in an acute care setting seem to summarize the picture of elders recommended for institutional care settings. In the institutional subsample, skilled care recommendations are consistent with, as the name applies, the need for more than custodial types of care including medication administration and rehabilitative care and services.

The analyses explained 22.4% of the variance in institutional versus community care recommendations and 24.3% of

the variance in skilled versus intermediate care recommendations. Despite a large number of variables reflecting background, social environmental, and physical impairment categories, the amount of explained variance remained low. There are obviously other factors operating in the LTC decision making process than those identified in this study.

Figure 1

Rehabilitative Trajectory

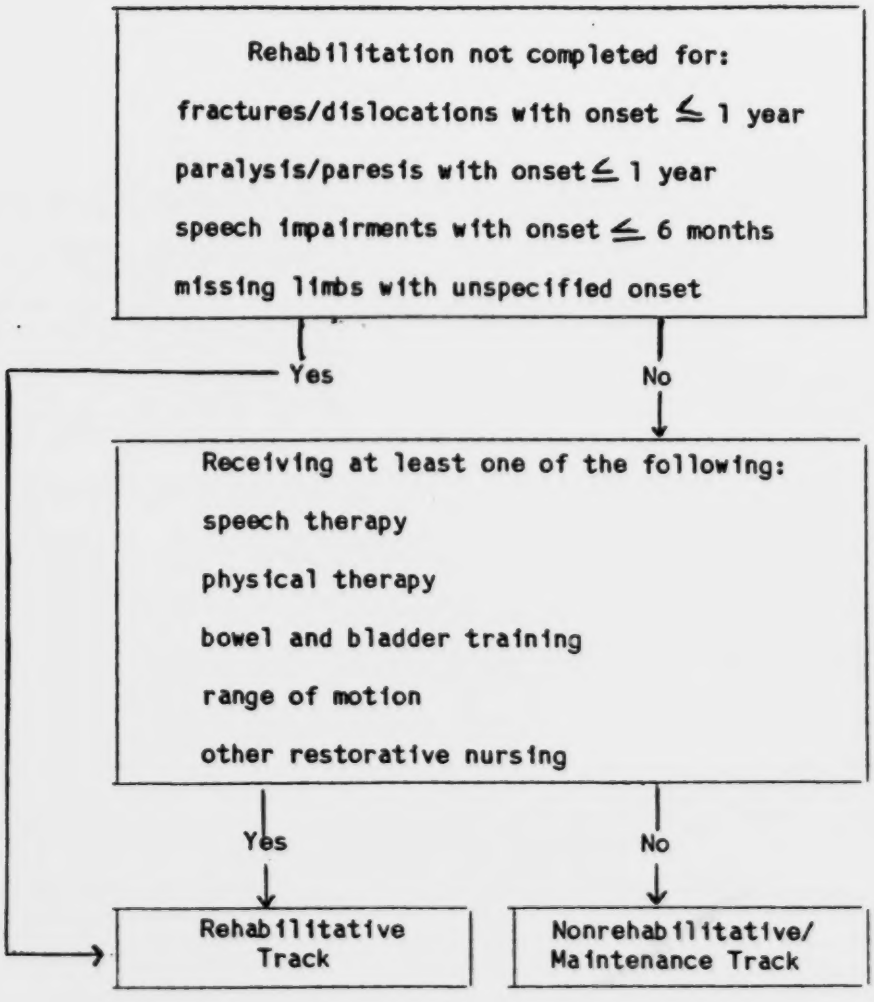

Table 1

Demographic Characteristics of the Sample
Compared to State and National Census Data

	Comparisons		
Variables	Sample%	State%	National%
Sex			
Male	31.3	41.9	43.5
Female	68.7	58.1	56.5
Race			
White	62.8	83.3	90.0
Nonwhite	37.2	16.7	10.0
Marital Status			
Married	20.7	-	54.0
Widowed	59.1	-	36.0
All other	20.2	-	10.0
Age			
60 - 64	6.2	30.0	26.4
65 - 74	25.3	43.5	44.2
75 - 84	40.0	21.0	22.6
85 plus	29.0	6.0	6.8

Note: Percentages are based on the population 60 years of age and older. State data are from Virginia Population Projections, 1985. Virginia Department of Planning and Budget, Research Section, Richmond, Virginia. National data are from Aging America: Trends and Projections (1984), Washington, D.C., American Association of Retired Persons and the U.S. Senate Special Committee on Aging. Marital status data by age was not available for the State, a dash represents the unavailable data. Due to missing data on 41 cases in the total sample, N = 3570 60 years of age and older.

Table 2

Explanatory Variables Used in the Analysis

Variable	Description	Mean	S.D.
Background Variables			
Sex	0=male, 1=female	—	—
Race	0=nonwhite, 1=white	—	—
Age	0=59, 1=60-69, 2=70-79, 3=80-89 4=90 and above	2.44	.94
Location of Patient	0=preadmission screening acute care 1=preadmission screening community	—	—
Marital Status			
Married	0=not married, 1=married	—	—
Widowed	0=not widowed 1=widowed	—	—
Social Environment Variables:			
Available Living Space	0=not available 1=available	—	—
Living Arrangement	0=does not live alone, 1=lives alone	—	—
Daughters	number of living daughters, Count 0-7	1.14	1.40
Informal Support	count of number of available informal supports for activities of daily living, housekeeping, living space, meal preparation, shopping, transporation, and other support: 0-7	2.34	2.38
Physical Impairment Variables:			
ADL Count	Number of ADL dependencies Range: 0-6	4.91	1.53

Table 2 (continued)

Variable	Description	Mean	S.D.
Physical Impairments	count of areas of impairment for speech, sight, hearing, joint motion, fractures/ dislocations, missing limbs and paralysis/paresis, dentition: 0-8	1.54	1.21
Behavior/ Orientation	the highest score on separate behavior and orientation measures with each measure ranging from 0 (appropriate or oriented) to 5 (comatose); 0-5	1.57	1.55
Medication Administration	ranging from 0 (uses no medication) to 4 (some or all medication administered by professional nurse): 0-4	2.61	1.01
Dressings	ranging from 0 (no dressings) to 2 (dressings on two or more sites): 0-2	.15	.40
Mobility	count of major restrictions in ability to go outside walking, wheeling, or stair climbing: 0-4	2.42	1.43
Nutrition Services Receiving	count of number of nutrition services currently receiving including diet, food/fluid intake, supplement, and dining location: 0-4	1.11	1.10
Decubitis Ulcers	ranging form 0 (no decubitis ulcers to 2 (decubitis ulcers two or more sites): 0-2	.16	.46
Seriousness of Illness	based on Wyler, Masuda, and Holmes (1968) 5 categories: 1=0-999,2=1,000-1,999;3=2,000-2,999,4=3,000-3,999,5=4,000	2.34	.99
Rehabilitative Trajectory	0=nonrehabilitative 1=rehabilitative/ maintenance	—	—

Note: Means and standard deviations of dichotomous variables are not reported.

Table 3

Results of Logistic Regression of Institutional Versus Community Care On Explanatory Variables[a]

Variables	Beta	Standard Error	p
Race	0.42	.09	.000
Age	0.10	.05	.034
Location of Patient	-1.04	.12	.000
ADL Count	0.46	.04	.000
Available living space	-1.24	.12	.000
Daughters	-0.07	.03	.036
Informal support	-0.12	.02	.000
Behavior/Orientation	0.15	.03	.000
Medication Administration	0.22	.05	.000
Nutrition Services	-0.11	.04	.017
Rehabilitative Trajectory	0.32	.10	.001

Model Chi-square=981.60 with 20 D.F. p=.000 R^2= .224
N=3147 Community cases=1221 Institutional cases=1926
464 observations deleted due to missing data

[a]Only those variables significant at .05 level or below are shown.

Table 4

Results of Logistic Regression of Intermediate Versus Skilled Care On Explanatory Variables[a]

Variables	Beta	Standard Error	p
Sex	0.31	.13	.016
Race	-0.53	.12	.000
Age	-0.16	.06	.015
Location of Patient	-1.78	.23	.000
ADL Count	-0.17	.07	.024
Informal Support	0.09	.03	.002
Physical Impairments	0.14	.05	.006
Medication Administration	0.15	.07	.025
Dressings	0.62	.17	.000
Mobility	0.52	.06	.000
Decubitis Ulcers	0.35	.14	.013
Rehabilitative Trajectory	1.08	.12	.000

Model Chi-square=687.85 with 20 D.F. p=.000 R^2= .243
N=1926 Intermediate Care=980 Skilled Care=946
295 observations deleted due to missing data

[a]Only those variables significant at .05 level or below are shown.

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